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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,951	09/22/2003	Robert G. Swisher	1794A1	5726

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PPG Industries, Inc.
Law-Intellectual Property 39S
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EXAMINER

MULLER, BRYAN R

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,951

Applicant(s)

SWISHER ET AL.

Examiner

Bryan R. Muller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) 20-58 and 62-68 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 59-61 is/are rejected.
- 7) ☐ Claim(s) 1 and 59 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 20-58 and 62-68 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/21/2005.

Double Patenting

2. A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 1-53 and 57-68 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-5, 8-17, 24-28, 31-44, 47, 50-54, 51 and 61-69 of U.S. Patent Application No. 10/664,860 (pub. 2004/0102137) in view of Elledge (2001/0044261).

4. In application no. 10/664,860, Allison et al. discloses in the claims all the structure and properties of the invention claimed in the current application with only minor differences. Allison discloses a polishing pad comprising three layers with no apertures or windows. Elledge discloses a polishing pad with a first layer with an aperture in line with a second layer made of a transparent material that forms a window,

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that is spaced from the working surface by the thickness of the first layer, below the aperture in the first layer and a third layer that also has an aligned aperture and teaches that such apertures and windows are common and advantageous within polishing pads to accurately determine endpoints during the polishing process (paragraphs 11-14), which provides more accurate and efficient polishing methods. Therefore, it is obvious to provide the polishing pad of Allison with an aperture in the top layer, aligned with a window, formed by a transparent middle layer, and it would further be obvious to provide an aligning aperture in the sublayer to allow for use of the window through this aperture. Other minor differences exist between the claims of Allison and the current application, such as the at least 0.02 inch thickness of the sublayer as stated in claims 14 and 37 of Allison, differs from the at least 0.04 inch thickness of the third layer as claimed by applicant in respective claims 16 and 35 but the 0.04 inch thickness does meet the claimed at least 0.02 inch thickness as claimed by Allison. Allison also claims that the middle layer has a thickness of 0.03 inches or less in claim 35, but claim 29 of the current application claims that the second layer has a thickness of 0.065 inches or less. The range of the claim in the current application contains all values claimed in the claim of Allison and would therefore be equivalent.

Claim Objections

5. Claims 1 and 59 are objected to because of the following informalities: a comma (,) should be located after the word "layer" in line 2 of the claims and after the word "opening" in line three of the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 6-8, 13-15, 19, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elledge (2001/0044261) in view of Lombardo (6,585,574).

8. In reference to claims 1 and 2, Elledge discloses a polishing pad comprising a first layer (151) having an outer facing working surface (154) for polishing a work piece (12) and an opening (180) and a second layer (160) wherein at least a portion of said second layer comprises an at least partially transparent window (layer 160 is an optically transmissive layer; paragraph 27, lines 15-17; therefore the portion below the aperture of the first layer is the window), wherein the window is spaced from the working surface by the thickness of the first layer by Elledge fails to disclose that the first layer is at least partially connected to the second layer or that the first layer absorbs at least two percent by weight of polishing slurry based on total weight of said first layer. The examiner takes official notice that it is old and well known in the art to at least partially connect a first layer with a working surface to an adjacent supporting layer, especially in polishing pads having optical windows, to prevent the polishing layer from shifting on the supporting layer, which would misalign the window(s) with any apertures or may

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cause damage to the work piece. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made at least partially attach the first layer to the second layer to prevent the first layer from shifting during operation. Lombardo discloses a similar multi-layer polishing pad and discloses that the first layer of the pad has hydrophilic properties and absorbs less than 4% moisture (such as slurry) by weight (col. 2, lines 50-53) and that the hydrophilic property is advantageous because the wafer polishing efficiency can be improved and wafer polishing costs may be lowered (col. 3, lines 21-24). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to replace the first layer of the Elledge invention with the hydrophilic first layer of the Lombardo invention to increase efficiency and decrease cost. The range of 4% or less, discloses by Lombardo, provides for several values within the range claimed by the applicant (at least 2% and 50% or less) and is thus an appropriate rejection (see MPEP 2131).

9. In reference to claim 3, it is obvious to replace the first layer of Elledge with the first layer of Lombardo, as discussed supra, and Lombardo further discloses that the pad surface (first layer) is composed of a polymeric matrix material, which is either a thermoplastic material or a cross-linked material.

10. In reference to claim 6, Elledge further discloses that the second layer may be made of Mylar (paragraph 27, lines 21-23), which is a substantially non-compressible polymer. Cronig (3,572,232) is provided as extrinsic evidence that Mylar is a non-compressible polymer (col. 4, lines 23-24).

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11. In reference to claim 7, Elledge discloses that the second layer may be Mylar, which is a polyester and Elledge further discloses that the second layer may be Lexan which is a polycarbonate (paragraph 27, lines 21-23).

12. In reference to claim 8, Elledge discloses that the second layer may be Mylar, as discussed supra, which is made from PET. Bowen et al (6,120,860) is disclosed as extrinsic evidence that Mylar is PET (col. 4, lines 30-31).

13. In reference to claims 13, 14 and 19, Elledge discloses a third layer (170), having an aperture (182) and at least partially connected to said second layer (paragraph 14, lines 4-7) and Elledge shows the apertures in the first and third layers aligned with the window in the second layer, it is shown by Elledge that the apertures in the first and third layers are aligned with the window in the second layer and it is obvious, as discussed supra, to at least partially connect the first and second layers.

14. In reference to claim 15, Elledge further discloses that the third layer is formed of polyurethane foam (paragraph 27, lines 28-29), which is a thermoplastic elastomer and a foam sheet.

15. In reference to claims 59-60, the obvious combinations of the inventions of Elledge and Lombardo, as discussed supra, would obviously be produced through a method comprising at least partially connecting a first layer, having a working surface for polishing a work piece and an opening, to a second layer, wherein at least a portion of said second layer comprises an at least partially transparent window, wherein the window is spaced from the working surface by the thickness of the first layer and wherein said first layer absorbs at least two percent by weight of polishing slurry based

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on total weight of said first layer and at least partially connecting a third layer having an opening to said second layer.

16. Claims 4, 5, 9, 10, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elledge (2001/0044261) in view of Lombardo (6,585,574) as applied to claims 1 and 14 and further in view of Breivogel et al (5,212,910).

17. In reference to claims 4, 5, 9, 10, 16 and 17, the obvious combination of Elledge and Lombardo, as discussed above, fails to disclose the relative thicknesses of each of the three layers. Breivogel discloses an improved three-layered polishing pad wherein a first polishing layer (referred to as third layer by Breivogel), similar to the first layer of Lombardo, is between 0.1 – 2.0 mm thick (approx. 0.004 – 0.8 inches), a second layer, made of a rigid material similar to the second layer of Elledge, is about 1mm thick (approx. 0.04 inches), and a third cushioning layer, made of foam similar to the third layer of Elledge, (referred to as first layer by Breivogel) is also about 1mm thick (claims 10, 7 and 5 respectively). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the corresponding three layers of the Elledge and Lombardo combination the same relative thicknesses as those disclosed by Breivogel in order to improve the invention. Because the thickness of the first and second layers disclosed by Breivogel are within overlapping or touching the ranges disclosed by applicant, this rejection is made valid (see MPEP 2131). Further, the range of **about** 1mm (0.03937 inches) disclosed by Breivogel for the third layer, may include 0.04 inches, which would touch the claimed range, but even if the range

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disclosed by Breivogel does not touch or overlap the claimed range, the applicant does not disclose a particular advantage or unexpected result to the thickness of at least 0.04 inches, and thus, it would be obvious through routine experimentation that the third layer of Breivogel, and hence obviously the third layer of Elledge, may be at least 0.04 inches thick.

18. Claims 11, 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elledge (2001/0044261) in view of Lombardo (6,585,574) as applied to claim 1 and further in view of Eppert, JR et al (2002/0002027).

19. In reference to claim 11, the obvious combination of Elledge and Lombardo discloses the polishing pad, as discussed supra, wherein it would be obvious to at least partially connect the first and second layer to each other but fails to disclose that the first and second layers are at least partially connected by an adhesive material or that the adhesive material is not on said window. Eppert discloses a multi-layer pad, similar to that of Elledge and discloses that is common for each layer of the pad to be connected to each adjacent layer using an adhesive (paragraph 10, lines 13-19). The disclosure of Eppert teaches that it is old and well known in the art to attach adjacent layers of multi-layer polishing pads to one another using adhesives and it is commonly known that attaching the layers is advantageous because it prevents the layers of the pad from shifting, relative to one another, which may cause damage to the pad, the work piece or the entire CMP apparatus. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to at least partially attach

the first and second layers of the Elledge and Lombardo combination to one another using adhesive. It would further be obvious that it would be advantageous not to apply any adhesive material to the window, because the adhesive may reduce the optical transmissive property of the window or may alter the optical signals that are transmitted and received through the window. Further, because there is nothing attached directly to the window portion of the optically transmissive layer, any adhesive applied to the window portion would be wasted. Therefore, it also would have been obvious to one of ordinary skill in the art at the time the invention was made not to apply any adhesive material to the window, to prevent distortion or prevention of the optical signal and to reduce the amount of adhesive material used and wasted.

20. In reference to claim 12, Eppert further discloses that an adhesive material that is commonly used to attach adjacent layers of polishing pads is pressure sensitive adhesive (PSA), thus, it would further be obvious to attach the first and second layer together using PSA's.

21. In reference to claim 18, Elledge discloses that the second and third layers are attached to each other but fails to disclose how. As discussed supra, it would have been obvious to attach the first, second and third layers by an adhesive material, as taught by Eppert.

22. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elledge (2001/0044261) in view of Lombardo (6,585,574) as applied to claim 59 and further in view of Eppert, JR et al (2002/0002027) and David (2003/0084774).

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23. As discussed supra, it would have been obvious to attach the second and third layers together using an adhesive material, as taught by Eppert, but Elledge Lombardo and Eppert all fail to disclose the step of stripping adhesive from at least one side of the window. David discloses a method of fabricating a polishing pad having a window, wherein the adjacent layers of the polishing pad are attached to one another with an adhesive material. Specifically, David discloses a second, optically transmissive layer (32) of Mylar (paragraph 23), similar to the second layer of Elledge, that comprises a window portion located below an aperture in the first polishing layer (24) and teaches that an adhesive is applied to the second layer to attach to a third layer, in this case the platen (30) and that the adhesive layer is either optically transparent also, or a section in the region of the optical window is removed prior to mounting the polishing pad on the platen (paragraph 25). Therefore it would have been obvious that unless the adhesive material of Eppert is optically transparent, which Eppert does not disclose, that the step of at least partially connecting the second layer to the third layer should include the steps of applying the adhesive to the second layer and removing (equivalent to stripping) the adhesive from the region of the optical window (at least one side of the window) to ensure that there is not any adhesive material covering the window, preventing or altering the optical signal that is passing through the window.

Response to Arguments

24. Applicant's arguments with respect to claims 20-58 and 62-68 have been considered but are moot because all of the above listed claims have been withdrawn as reading on a non-elected species.

25. Applicant's arguments, see Remarks, filed 7/25/2005, with respect to the rejection(s) of claim(s) 1-68 under the obvious-type double patenting doctrine have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made for claims 1-53 and 57-68 in view of U.S. Patent Application No. 10/664,860 (pub. 2004/0102137) and Elledge (2001/0044261).

26. Applicant's arguments, see Remarks, filed 7/25/2005, with respect to the rejection(s) of claim(s) 1-19 and 59-61 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made to claims 1-3, 6-8, 13-15, 19, 59 and 60 in view of Elledge and Lombardo, claims 4, 5, 9, 10, 16 and 17 in view of Elledge, Lombardo and Breivogel, claims 11, 12 and 18 in view of Elledge, Lombardo and Eppert and claim 61 in view of Elledge, Lombardo, Eppert and David.

27. In reference to the argument that the Lombardo patent issued on July 1, 2003, which is after the applicant's priority date, the Lombardo reference was filed on June 19, 2000, which would make it a 35 U.S.C. 102(e) reference if the reference was anticipatory, therefore the Lombardo reference has a proper filing date to be used in a 103 rejection as a secondary (or primary) reference.

28. In reference to the argument that claim 19 was mentioned in the body of the previous non-final rejection, dated 1/21/2005, the examiner accidentally left claim 19 out of the listing of rejected claims in paragraph 8 but does list claim 19 and address the limitations of claim 19 in paragraph 12, thus, making the rejection in the current office action a second rejection, on new grounds as necessitated by amendment and thus the rejection may properly be made final.

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Birang et al (5,893,796), Wiswesser (6,159,073), Jensen (6,261,168), Sato (6,139,400), Obeng (6,439,968), Swisher (6,477,926), Ohta (2004/0235392) and Shimomura (JP 2002075933 A) all disclose polishing pads with properties similar or the same as those disclosed in this application.

30. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan R. Muller whose telephone number is (571) 272-4489. The examiner can normally be reached on Monday thru Thursday and second Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J. Hail III can be reached on (571) 272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BRM BRM
2/1/2006


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